

# ROBOGRAPHIC SYSTEM

COMPUTER AIDED DESIGN FOR FIRST TIME USERS



# 1000 SERIES BITSTIK GRAPHIC SYSTEM

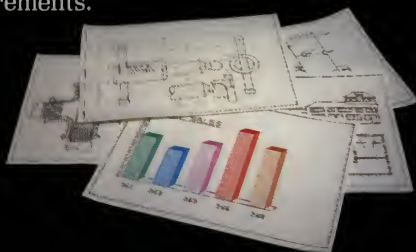
**For unrivalled cost effectiveness and flexibility – buy Robographic Systems.**

## INTRO

**Now, everyone who produces and uses drawings or graphics for virtually any application can enjoy the benefits of an in-house Computer Aided Drawing (CAD) System.**

A complete workstation, with a colour monitor and hi-resolution plotter is available now at a really affordable price.

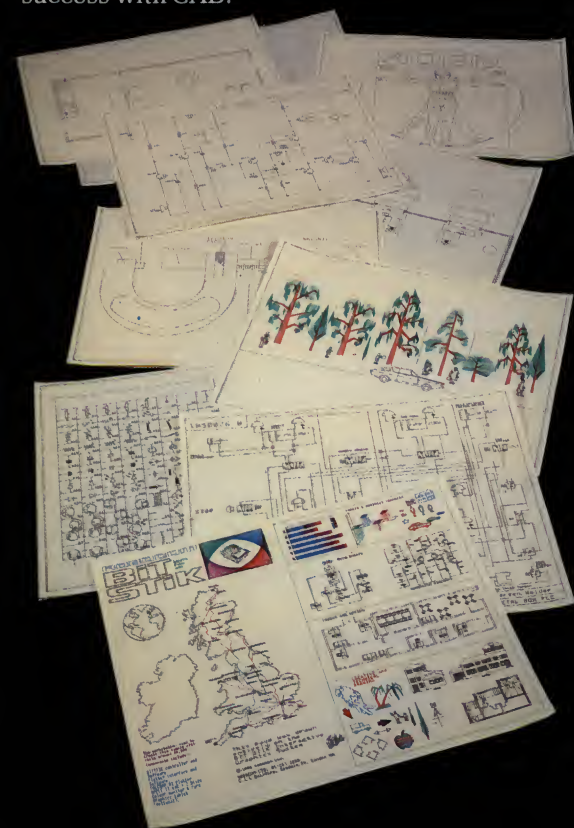
You can produce drawings from A5 to A0 on a range of plotters. A single workstation can be expanded to accommodate all your future requirements.



The revolutionary British breakthrough that makes this possible is the powerful ROBOGRAPHICS Software System built around the uniquely easy to operate 'BITSTIK' precision controller.

Eight man-years in development, this system, operating on the versatile Apple II+ and IIe microcomputer, is not only as powerful as many systems costing ten times more, but incorporates many features not available elsewhere.

Full details are given on the back of this brochure but outlined here are the three major differences that guarantee your first time success with CAD.



## EASE OF USE

More friendly than other CAD systems the ROBO 1000 takes a totally new approach to the problems of designers and draughtsmen quickly and productively harnessing the power of computer graphics.

You enter and manipulate drawings via the unique BITSTIK controller, emulating the traditional technical drawing instruments, with the addition of digital precision.

The draughtsman's skill is enhanced by this powerful tool to produce complicated and accurate originals. Once drawn and saved on the library the modules can be assembled and manipulated, repeatedly and easily. Anyone in your organisation can use the system at their own level.

The screen is presented as a workpage on which you draw directly, in colour, using the BITSTIK to position and control your electronic drawing aids.

You can zoom into the page and Pan around to add as much detail as needed.

A 'Rubber Band' input technique displays a dynamic trace of lines, arcs, nibs, etc., reducing errors and consequently speeding up the drawing process.

All the drawing and control functions are easily selected from the menus and palettes displayed at the screen edges. The keyboard is only used to enter text like a normal typewriter. There are no complicated control codes or languages required.

You can set the page size from 1mm to 1000km, drawing at 1:1 scale. The system automatically retains scale when you combine pre-drawn units on the same page.

You can plot all or part of your drawings to any scale at any size up to A0 with the easy to use BITSTIK controlled software provided with the full system.

All these features and many more are combined in the master program in a logical and easily accessible manner. This allows the first-time user to quickly learn to operate the system as well as giving scope for very fast operation by the more practised user.





## APPLICATIONS

Electronic  
Engineering  
Electrical  
engineering  
Mechanical  
engineering  
Marine engineering  
Chemical engineering  
Civil engineering  
Hydraulics and  
pneumatics  
Process control

Plant layout  
Architecture  
Building  
Heating, ventilation  
and air-conditioning  
Education and  
training  
Marketing  
Lettering and logos  
Cartography

Component drawings	Text and page layouts
Schematic diagrams	Finished artwork
Flow charts	Lettering
Plans and layouts	Step and repeat
Isometric drawings	35mm slide
Catalogues	Overhead
Graphs and reports	transparencies
Cost sheets	Video display
Manuals	sequences
	Animated computer
	displays

[illegible]

GROUND PLAN

PERSONNEL

WAITING ROOM

RECEPTION

KITCHEN

INTERVIEW ROOM

STORE

STORE

STORE

U value achieved 0.8W/m<sup>2</sup>°C.

260MM CAVITY BRICK WALL

100 BLOC  
221725

d.p.c. f

213x165  
f.c. 1m<sup>2</sup>  
Type A

gprac vapour check thermal b

The collage contains six technical diagrams:

- Top Left:** A mechanical schematic of a pump system. It shows a horizontal pump connected to a vertical tank, with various pipes and valves.
- Top Center:** A flowchart starting with 'START', followed by 'A = 1', 'BANDER NUMBER = B', 'B = 1', and a decision diamond 'A > B?'. If 'YES', it goes to 'STOP'. If 'NO', it goes to 'A = A + 1', then another decision diamond 'A > B?'. If 'YES', it goes to 'STOP'. If 'NO', it goes to 'B = B + 1', then a third decision diamond 'A > B?'. If 'YES', it goes to 'STOP'. If 'NO', it loops back to 'A > B?'.
- Top Right:** An electronic circuit diagram featuring two BC108 transistors, various resistors (e.g., 22k, 10k, 1k, 100k), capacitors (e.g., 100p, 10n, 100n), and a 9V battery.
- Bottom Left:** A pneumatic circuit diagram showing two solenoid valves (S1, S2), two cylinders (A1, A2), and a double-acting cylinder (A3) connected to a 0.5 MPa air source.
- Bottom Center:** A hydraulic circuit diagram showing a pump, a pressure relief valve, a directional control valve, and a cylinder, with various flow control valves.
- Bottom Right:** A PCB layout for a circuit with two ICs: IC4 (7416) and IC5 (7416). It includes various components like resistors, capacitors, and a 9V battery.



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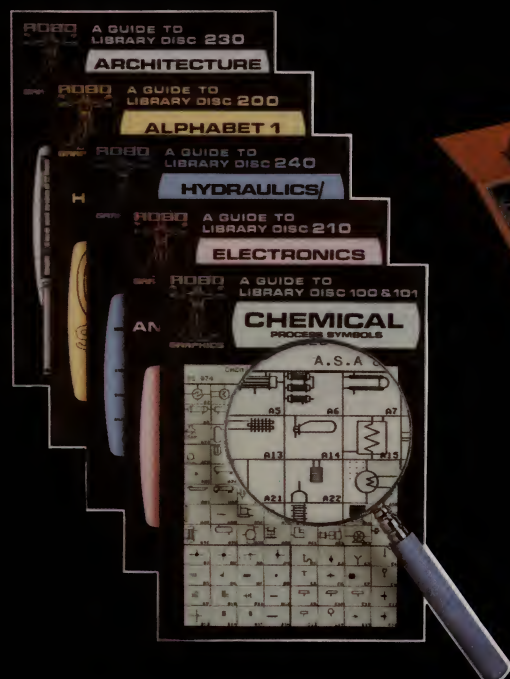
## THE LIBRARY DISK CONCEPT

Unlike other CAD systems all your drawings and modules are filed and presented as graphic images on library indexes. You can see the actual drawings you have stored on disk as miniature pictures held in boxes for rapid visual selection. You simply put drawings into a box or take copies out and position them on your page any way you want. You can interchange between library disks at any time giving you effectively unlimited drawing storage capacity.

By simply producing and saving drawings you rapidly build up a dedicated library of your own requirements. The drawings can be anything from a schematic symbol to a complete detailed project plan. Drawings can be compiled from any number of previously saved components, so avoiding repetitious drawing.

Drawings, layouts and modules can be assembled on up to 16 layers which can be worked on separately or combined together at any time. Special functions allow you to change the colour and/or line type of any module and the 'Flip' function gives you a mirror image – ideal for easy symmetrical drawing or working on both sides of a panel, circuit board, etc.


Editing or amending any part of the drawing is a simple task and special global edit facilities allow you to change a part of a drawing whenever it is repeated. You can produce a rapid printout of any index page for reference and any disks can be copied for distribution or archive purposes. The system can be expanded with a hard-disk storage unit which can keep a large number of index pages on-line.



A growing range of pre-drawn library disks is available covering many common applications including schematic symbols, typefaces and business graphics. The disks come with guide books packed with useful tips and ideas to help you fully utilize the system. In addition we will be making available to all our users some customer-drawn disks for more specialist applications.

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## THE COST

The very low cost of the Robographics system enables many more applications to be cost effective with rapid pay-back (often less than 6 months). A complete workstation, including plotter and all necessary software, is available for around £4,500.  This remarkable price includes delivery and basic instruction and is made possible because of our large customer base and the wide range of applications for which the standard ROBO 1000 system is suited.

The standard system may be easily extended with additional fixed memory storage, large plotters and up to 16 workstations can be networked together.

This means that for a fraction of previous costs you can equip a complete drawing office or studio with workstations, sharing plotting and other facilities to suit your requirements and budget.

And remember – every system can use it s Apple computer with any of the hundreds of commercial programs available including accounting, word processing, management, engineering and games.

For existing apple owners and for evaluation purposes, we are making available the controller and drawing software complete with manuals for direct use with your Apple II microcomputer. This pack gives you an ideal opportunity to familiarize yourself with the system without making an initial commitment other than the cost of £445.00 (deductable from the main system cost).



Robograph 1 A4 system RRP £4,500.00  
Robograph 3 A3 system RRP £6,600.00  
Other systems available.  
Prices exclude VAT and are correct at time of printing.



#### DISTRIBUTORS FOR:



CALCOMP



#### ROBOGRAPH 3 WORKSTATION

This system is specially suited for technical line drawing with its A3, 8-pen plotter. The system includes:

Bitstik controller, 2 library disks, 10 blank disks, Robo 1000 graphics software, Robo 1000 plotter software, Apple IIe computer, 2 disk drives, Colour R G B monitor, Calcomp '81 A3 plotter, Custom built workstation with all wiring interference suppressor, fan and keyswitch, all interface cards.

The system prices includes installation (England) and basic tuition.

#### ROBOGRAPH 1 WORKSTATION

As Robograph 3 but with an A4, 2-pen plotter. Can multi-pass to produce up to 12-colour images on paper, board or projection transparency. Ideal for data sheets, report pages, original artwork and proof plots prior to larger plotting.

#### ROBOGRAPH. O WORKSTATION

This unit provides an electronic drawing production station without local plotter. It can drive any of the system plotters up to A0 as well as a printer or other output device.

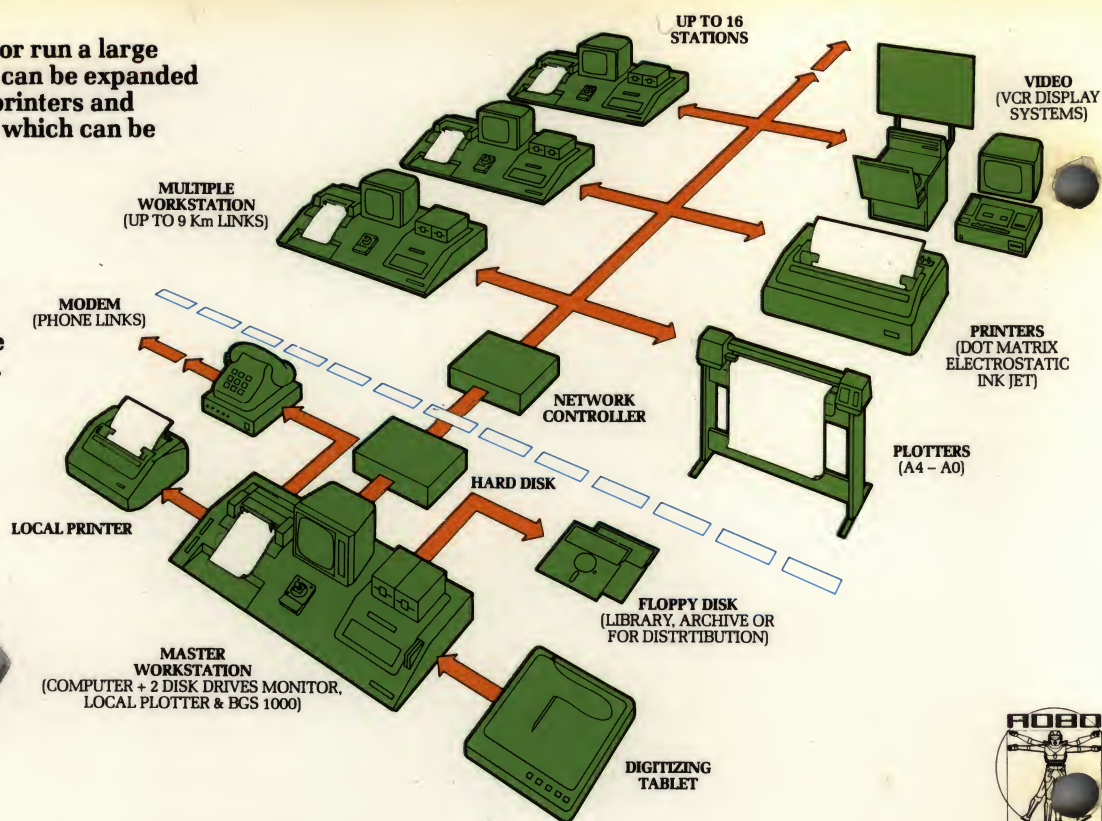


# SYSTEMS OPTIONS

Whether you are a one man business or run a large drawing office, Robographic systems can be expanded to meet your requirements. Plotters, printers and video, form a range of output devices which can be shared by all workstations. This system map shows some of the possible combinations.

## BITSTIK

The core of the system is the unique Bitstick precision controller – shown revealing its 3 axis direct drive mechanism and interface electronics.



## SOFTWARE SPECIFICATION

### DRAWING FUNCTIONS

**LINE:** Plots a straight line between two defined points.  
**BLENDED ARC:** Plots an arc at a tangent to any line, arc or construction line.  
**CENTRE-RADIUS ARC:** Plots an arc about a defined centre point. First set radius then angle.  
**CIRCLE:** Plots a complete circle. First set centre then diameter.  
**NIB:** Plots a solid fill of 5 densities of hatching between two nib lines of any length or angle.  
**STREAM:** For freehand line drawing via the Bitstick or digitising tablet.  
**COLOUR:** Any of 6 colours can be used to assign up to 6 line weights or any other pen type on plotting.  
**LINE TYPE:** Continuous and 3 dot spacings can be assigned to give dashed or chain-link on plotting (can be used with nib-type to give large range of tonal effects).  
**PAINT:** Gives alternate palette of 16 colours. Automatically fills any enclosed area with colour. For producing screen images and slides.  
**TRACE:** Allow use of digitising table for tracing existing drawings. Cursor control goes to the stylus. All other functions as for Bitstick.  
**TEXT:** Keyboard entry of full ASCII 1 character set. Text labels and blocks positioned at any of 4 rotations and 6 sizes (pre-saved text can be placed at any angle, size or 'stretch').

### EDITING FUNCTIONS

**ERASE:** Marks last entry and erases it. Can be stepped back and forth to mark and erase any entry.  
**FIND:** Automatically locates any previously entered point.  
**MOVE:** Finds any copied module and allows you to reposition it.  
**DUPLICATE:** Finds any copied module and allows you to manipulate and position copies.  
**SWAP:** Substitutes a chosen library module for a module already on the workpage.  
**COLOUR OVERRIDE:** Changes the colour of a copied library entry (or changes the line weight).  
**LINE TYPE OVERRIDE:** Changes the line type of a copied library entry to act as a construction grid.

**X FLIP:** Generates a reverse view about the horizontal.  
**Y FLIP:** Generates a reverse view about the vertical.

### LIBRARY FUNCTIONS

**FILE:** Files the current workpage onto the library index.  
**COPY:** Copies any library entry onto the workpage. Before placing you can set size, rotation and 'stretch'.  
**TITLE:** Add a text title to your filed graphic image.

### VIEW FUNCTIONS

**ZOOM:** Defines any area and enlarges it to full screen. Also acts as reverse zoom, reducing screen view to any defined area. Continuously variable up to a magnification of 2120:1.  
**PAN:** Moves screen view in any direction.  
**PAGE:** Displays workpage at base scale.

### PRECISION DRAWING AIDS

**ANGLE LOCKS:** Drawing and copy cursors can be locked onto lines of any angle. Two sets of angle locks are provided, one in degrees and minutes, the other in degrees. Use as variable set squares – ideal for isometric drawing.  
**ORTH:** Orthogonal lock for automatic 90° angles from any point.  
**N-TAN:** Sets locks at tangent and normal to last entry or construction line.  
**GRID LOCKS:** Gives a grid at any angle about any origin. Variable X and Y spacing can be pre-set. Automatic default square or page ratio grids can be selected at any time.

### SCALE DRAWING FUNCTIONS

**PAGE SCALE:** Set width of page 1000 mm down to 1mm. You draw at 1:1 scale rescaling at plot-time if required.  
**DECIMAL GRID:** A square grid is provided on the page with metric spacing displayed. Draw on or off the grid.  
**Zooming in or out re-displays grid to new spacing. Zoom down to a 0.01mm grid from 1000mm.**  
**COPY SCALE:** Library units automatically retain true scale when copied onto scale drawings.

### UTILITY FUNCTIONS

**SCALE:** Set or alter page base scale.  
**EDIT:** Edit or amend a module – either from the library or direct from the workpage.  
**ZOOM STORES:** Saves and recalls any 2 zoomed views.  
**SCREEN IMAGES:** Handles screen view as an image for recall, use in other programs, slide shows, video and direct print-out.  
**CATALOG:** Catalogues disk for named images.  
**WIPE:** Wipes screen and memory and resets to draw.  
**FULL:** Clears palette from screen.

### SYSTEM CONTROL FUNCTIONS

**RUN MAIN GRAPHICS PROGRAM:** Runs the graphics program.  
**FORMAT LIBRARY DISK:** Allows you to define your graphic library layout.  
**FORMAT WORK DISK:** Automatically 'formats' your work disk.  
**TRIM CONTROLLER:** Trims the controller for use with your computer.  
**SET UP PRINTER:** Configures the system for your printer.  
**SET UP DIGITISER:** Configures the system for your digitising tablet.  
**EXIT:** Exits from the system.

### PLOTTING FUNCTIONS

**SET UP:** Configures the system for chosen plotter and interface.  
**LOAD:** Selects drawing to be plotted from library index.  
**DISPLAY:** Displays drawing on screen.  
**ZOOM:** Enlarges any area of the drawing for plotting.  
**CHANGE LT:** Converts 'programmed' line types to a variety of plotted line types.  
**CHANGE COLOUR:** Converts 'programmed' colours to different pens (for additional control over colour/pen weight).  
**SCALE FACTOR:** Establishes scale of drawing when plotted.  
**PLOT:** Plots the drawing at chosen position on paper.

## SERVICE

All Robographics systems are fully tested before leaving our premises and are delivered assembled and ready to use. All you need is a single 13 amp socket.

The equipment is covered by a 90 day warranty (Apple and Bitstick – 1 year warranty). System customers are provided with a special service number which they should use in the first instance to contact our hardware or software departments in case of difficulty.

In addition we can provide a full maintenance and service contract covering all the equipment for on site service within 24 hours – ask for full details.

## TRAINING

All systems include reference manuals and a user-friendly tutorial manual. Using these manuals practically anyone can learn to use the system in a few hours. In addition we provide a familiarization and basic training session with each system at the time of delivery. Further training is available at reasonable rates either at your installation or on our premises in North London. To be most effective the advanced training is best undertaken once your operators have spent a little time using the system – again ask for full details.

## LOCAL DEALER NETWORK

The Robographics system is available nationwide from any of our local specialist dealers. As well as demonstrating and supplying the systems these dealers will be pleased to provide any further information and help you tailor the system to your requirements. For the name of your local dealer or any other enquiries please 'phone Robocom today.

## DEALER STICKER



Datamate B.V.  
 Postadres: Postbus 75061  
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 Telefoon 020 - 434918  
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